

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 13 JUL 2004

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To:

see form PCT/ISA220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/008285

International filing date (day/month/year)
17.03.2004

Priority date (day/month/year)
18.03.2003

International Patent Classification (IPC) or both national classification and IPC
G06T15/10

Applicant
QUALCOMM INCORPORATED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA220.

3. For further details, see notes to Form PCT/ISA220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/008285

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/008285

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	7,8,13,16,17,24,25
	No: Claims	1-6,9-12,14,15,18-23,26-29
Inventive step (IS)	Yes: Claims	
	No: Claims	7,8,13,16,17,24,25
Industrial applicability (IA)	Yes: Claims	1-29
	No: Claims	

2. Citations and explanations

see separate sheet

Re. item V:

1. Reference is made to the following document:

D1: US-B-6 407 7361 (REGAN MATTHEW JAMES PATRICK) 18 June 2002
(2002-06-18)

Novelty:

2. The present application does not meet the requirements of Article 33(2) PCT, because the subject matter of claims 1 - 6, 9 - 12, 14, 15, 18 - 23 and 26 - 29 is not new.

- 2.1. Re. independent claims 1 and 18: Document **D1** discloses (references in parentheses referring to this document):

"An apparatus comprising a rendering engine that defines a rectangular area of pixels that bounds a triangular area of the pixels (col. 7, l. 43 - 45), and evaluates coordinates [...] to selectively render the pixels that fall within the triangular area (col. 6, l. 55 - 61; col. 7, l. 43 - col. 8, l. 8)."

This is the exact (shortened) wording of independent apparatus claim 1. A similar reasoning applies mutatis mutandis to corresponding independent method claim 18.

- 2.2. Re. dependent claims 2 - 6, 9 - 12, 14, 15, 19 - 23 and 26 - 29: The following additional features are also disclosed in **D1** (references in parentheses referring to this document):

- claims 2, 12 and 19: equations describe edges (col. 23, l. 39 - 46; Fig. 3)
- claims 3 and 20: inlier determination via set of linear equations (col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7)
- claims 4 and 21: inequality (col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7)
- claims 4 and 21: coefficients (col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7)
- claims 5, 12 and 22: update pixels' attributes (col. 6, l. 55 - 61)
- claims 5, 12 and 22: linear equations to describe attributes (col. 6, l. 55 - 61)
- claims 6 and 23: color and / or texture as attributes (col. 1, l. 43 - 45; col. 7, l. 18 - 21)

- claims 9 and 27: z-buffer (col. 3, l. 43 - 45; col. 7, l. 18 - 42)
- claims 9 and 26: rasterize only visible pixels (col. 7, l. 18 - 42)
- claim 10: control unit specifies vertices (abstract)
- claim 11: vertex buffer (abstract)
- claim 11: bounding box generator (col. 7, l. 43 - 45)
- claim 11: selective rendering (col. 6, l. 55 - 61; col. 7, l. 43 - col. 8, l. 8)
- claim 12: compute linear coefficients for attributes (col. 23, l. 39 - 46; col. 28, l. 34 - col. 30, l. 7)
- claim 14: integrated circuit (col. 6, l. 35 - 39)
- claims 15 and 29: cache with block size stores pixels (col. 76, l. 11 - 16)
- claims 15 and 29: rectangular area is function of cache's block size (col. 7, l. 43 - 45; Figs 14a - 14c)
- claim 26: visibility determination (col. 6, l. 55 - 61; col. 7, l. 18 - col. 8, l. 8)
- claim 28: compute opposite corners of rectangular area (col. 28, l. 34 - 44; Fig. 5)

Inventive step:

3. The present application does not meet the requirements of Article 33(3) PCT, because the subject matter of claims 7, 8, 13, 16, 17, 24 and 25 does not involve an inventive step.
- 3.1. Re. independent claim 16 and dependent claim 13: Document **D1** discloses (references in parentheses referring to this document):

"[...] a display (abstract);
a processor to generate video output data [...] (col. 18, l. 18 - 23);
and a rendering engine that applies a direct evaluation algorithm (col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7)
to render [...] the triangle without interpolation between edges of the triangle (col. 23, l. 39 - 46; Fig. 3)."

The only feature not disclosed by **D1** is the mobile communication device. However, this feature does not contribute to the technical effect of providing a rendering technique which does not need interpolation. Therefore, the feature of a mobile communication device is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances,

without the exercise of inventive skill.

A similar reasoning applies to dependent claim 13 which only defines a wireless communication device in addition to claim 1 (which lacks novelty, cf. point 2.1. above).

- 3.2. Re. dependent claims 7, 8, 24 and 25: Claim 7 defines in addition to claim 5 the computation of coefficients A, B and C via a matrix and their application to each pixel within the triangle. Claim 8 further specifies said matrix and the exact equation by which the coefficients are applied. The application of the coefficients via such an equation is disclosed in **D1** (cf. col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7). Furthermore, **D1** discloses the derivation of coefficients A, B and C from linear equations which describe the properties of the triangle's vertices (see col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7 in **D1**). Although **D1** does not explicitly mention the use of a matrix (especially one as in claim 8) to derive A, B and C, the document hints at such a use (see e.g. col. 23, l. 39 - 46; col. 28, l. 45 - col. 30, l. 7). Therefore, the feature of using a matrix (claim 7) as well as the special matrix defined in claim 8 are merely straightforward possibilities which the skilled person would select, in accordance with the circumstances, without the exercise of an inventive step.

A similar reasoning applies mutatis mutandis to corresponding method claims 24 and 25.

- 3.3. Re. dependent claim 17: The additional feature of a processor issuing a command to the rendering engine is also disclosed in the abstract of **D1**.

Further remarks:

4. To meet the requirements of Rule 5.1(a)(ii) PCT, the document **D1** should be identified in the description and the relevant background art disclosed therein should be briefly discussed.
5. The features of the claims should be provided with reference signs placed in parentheses to increase the intelligibility of the claims (Rule 6.2(b) PCT).